



JOURNAL

APRIL 1959

RADIO AND TELEVISION
IN THE SOVIET UNION

INDUSTRY AIDS EDUCATIONAL TV

A PARENT LOOKS AT TELEVISION

UNDERSTANDING THE RESULTS
OF ETV RESEARCH

PROJECTS AND PRODUCTS

WANTED: SCIENCE TEACHERS FOR TV

NAEB RESEARCH FACT SHEETS

VOLUME 18

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Radio and Television in the Soviet Union

Soviet broadcasting is 100 percent
a commercial for the state

In January, 1958, the United States and the USSR agreed to exchange materials and specialists in several fields, including radio and television broadcasting. After many false starts, our five-man delegation arrived in the Soviet Union on October 25, 1958, and left three weeks later on November 15. The delegation represented diverse aspects of American broadcasting. It included Ralph Cohn, vice president of Screen Gems, an organization which produces films for television; Jerry Danzig, vice president for radio network programs at NBC; Ralph Harmon, vice president for engineering with the Westinghouse Broadcasting Company; and Mike Wallace, the ABC television interviewer. I was the only educator of the lot, and also the only program person without a New York-Hollywood orientation, which gave me a double role to play.

Personal and professional relations with our Soviet hosts were mostly good. We had long conferences — sometimes five hours at a stretch — with the top radio and television people in Moscow, Leningrad, Tbilisi and Kiev. We were

entertained and we reciprocated. We were shown or told most of the things we wanted to see or hear about, except that our engineer was disappointed several times in not

By **Burton Paulu**

Director of Radio and Television Broadcasting, University of Minnesota, and Past President of the NAB. Dr. Paulu visited the Soviet Union for three weeks in the fall of 1958 as a member of an official five-man American delegation observing radio and television in the USSR. This is the fourth of six reports which he recorded for the NAB radio network on his return.

getting to visit factories and other technical installations. But, in view of past US-USSR relations, we did very well indeed.

As one would expect, USSR broadcasting is government run, and is non-commercial. Set users pay a yearly license fee which helps support the service. This is 120 rubles (\$12.00) for television, and

32 rubles (\$3.20) for radio. Ultimate responsibility for programs is vested in the USSR Council of Ministers, which appoints an All-Union Radio and Television Committee. The Ministry of Communication is in charge of transmitters and inter-connecting lines. But in practice, responsibility is divided between the All-Union government in Moscow, and the governments of the fifteen republics of the USSR, which also have Radio and Television Committees and Communication Ministries.

One of our favorite questions at meetings—and one of theirs in return—was: what are your professional backgrounds? How did you get into broadcasting? We found that most—but not all—of the top people were Communist Party members, although heads of such specialized departments as drama and music often were not.

What are the objectives of USSR broadcasting? After several days of conferences, I drew up a statement which they accepted. It ran as follows: "Support of the basic ideologies of Communism, of the Communist Party, and of current government policies and practices is the principal, underlying and continuing objective of all Soviet broadcasting."

Another member of our group remarked that, since all programs seemed to have a propaganda objective, one could say that Soviet broadcasting was fifty percent a commercial for the state. Our hosts reacted vigorously; if you want to put it that way, they said, better count it as a hundred percent com-

mmercial for the state!

In the Soviet Union, radio is much further developed than television. There is one national network, fed out of Moscow, and 200 other studio centers, in addition to many stations which merely relay programs. There are fifty or sixty FM stations too. Most larger cities have two or more stations. Moscow, for example, has three. The principal stations in European Russia, and some in Asia, are connected by wire lines, just like ours. In addition, to cover the wide open spaces, the Soviet Union also puts out domestic programs on short-wave.

Local stations have considerable latitude in deciding what they take from the national network, and what they originate themselves, although they are required to carry certain programs of national political importance. One thing affecting local broadcasting, which wouldn't occur to us, is the many languages of the Soviet Union. All told, domestic broadcasts are presented in fifty-seven different languages. In the Georgian capitol of Tbilisi, for example, the principal radio station is on the air 18 hours a day, taking 4 hours from the national network and originating 14 of its own; of these, 12 are in the Georgian language. The distribution of radio sets is very extensive, there being one radio receiver for every four urban dwellers, and one for every nine rural inhabitants. A large percentage of these, however, are loudspeakers fed from central-

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Industry Aids Educational TV

In his December editorial the writer called attention to the services to educational television being provided by NBC in its current telecasts of the college course in "Atomic Age Physics," referred to as "Continental Classroom."

Other commercial broadcasting companies have likewise devoted funds, facilities, and services to educational broadcasting. For example, Donald H. McGannon, President, Westinghouse Broadcasting Company, Inc., testified before the Senate Interstate and Foreign Commerce Committee on January 27, 1959, urging favorable action on S-12, a bill to "expedite the utilization of television transmission facilities in our public schools and colleges, and in adult training programs."

Mr. McGannon, in his testimony, emphasized the importance of educational television to commercial television by stating that "Commercial television as a medium of entertainment, information, and advertising requires the pure research and laboratory techniques and opportunities of educational television, working hand-in-hand to achieve the degree of fuller enlightenment every one of us in the industry feels can and even *must* be achieved."

In this connection he set forth

in detail some of the contributions his company had made in money, in property, in technical services and in programs made available to educational television and radio stations in the areas where Westinghouse operates stations and even in some instances in areas where it does not operate stations. It is an impressive record, constituting as it does contributions conservatively estimated to be well in excess of half a million dollars.

It is no secret that the primary problem faced in establishing and programming educational television facilities is financial. And if, as Mr. McGannon points out, commercial television needs the assistance of educational television, should not all commercial broadcasters urge the passage of S-12? This, as Mr. McGannon testified, "will achieve a breaking of a 'log-jam' that is thwarting the forward progress of educational television."

Should not commercial broadcasters also do everything else, financial and otherwise, in their power to increase the number of educational television stations until every viewer in the nation is within the service area of at least one of these important educational instruments?

TRACY F. TYLER, *Editor.*

A Parent Looks at Television

TV used as electronic baby-sitter

is cheap and sure -- and leads to chaos!

I am sure each of us, whether as parents or as teachers, has had more than one occasion to think seriously about the effects of television viewing upon our children or students. I venture to guess that a fair cross-section of our thoughts would reveal attitudes on the subject ranging from resignation, through more or less elaborate plans to cope with the problem, to grim warfare that may involve the whole family.

One thing is certain: we do think about television, and we do worry about its effects on our children.

If I may be personal for a moment, our own television set causes us a good many misgivings. We do in our family have rather abundant evidence that there is a direct correlation between our children's tractability and those quiet periods between the time the set quits and the time the repair man arrives.

We have quite honestly found that the use of television as a sort

of electronic baby sitter is cheap and sure—and leads to utter chaos.

Perhaps we are hopelessly out of date, but in our family we like to read, to hold conversation about

By Edward M. Nielsen

*Parent and PTA member.
From an introduction to a panel discussion of television at the Evanston, Illinois, Oakton Elementary School PTA meeting, March, 1959.*

something more substantial than the weather, and, in general, to lead what for want of a better term I would like to call meaningful lives.

It is what we want for our children as well, and we have always quite freely welcomed into our home anything or anyone who can make a contribution to the general ends we seek.

I am sure that as parents we

are not too different from others, and that to a greater or lesser extent we all feel quite strongly that our children are to some degree conditioned for good or ill by their environment.

More often than not, and I say this with genuine disappointment, television *per se* falls far short of what it might be as a contributing partner to the broader aspects of imparting something of our cultural heritage to our children.

I realize full well that there are a few excellent programs. Too, in a closely allied sense of the word "culture," television is itself a part of our broader culture, and in that sense, cannot help but contribute to it. Still, as a parent, I find myself, with only rare (and thereby most welcome) exceptions, contemplating the television set in some bewilderment. Indeed, I am often most bewildered at my own reactions, and sometimes wonder why I don't just throw the thing out.

But stubbornly I retain hope. Attempts are being made, by both our commercial and our so-called educational stations to upgrade their programming. Unfortunately, the highest gloss is still too often put on the shoddiest material. At the other extreme, for what reason I have never been able to understand, programs that purport to have any intrinsic value for the viewer are often poorly put together.

It is as though the word "educational" is itself supposed to hold an audience, no matter how slovenly the research or how amateurish the production. The result in many cases is to perpetuate the too-common feeling that something worthwhile must be synonymous with something dull.

As parents, then, we live with television in the home, for better or worse, as part of our daily lives. It is a powerful medium, perhaps much more powerful than most of us realize. Personally, I think this may be because of the lack of imagination required on the part of the viewer. This child of 25 years ago, with his ear glued to the radio speaker, had at least to work his imagination feverishly to keep up with the dialogue in "Little Orphan Annie." Today, however, the child just sits and stares, while the program is poured into him. His participation, that is to say his active participation, is almost nil. Only rarely does he question what parades across the screen in front of him.

We must, then, be concerned for him. We must be aware of what assaults him as he sprawls hypnotized in front of the screen, and we must care enough about him and his peers to exercise, as parents, a judicious control over his viewing — if only to shepherd him safely to the point at which he begins to ask his own critical questions about the fare offered him. The censorship function is ours.

Understanding the Results of ETV Research

Will it play a constructive catalytic role in education?

A Brief Historical Perspective

Ten years have passed since the beginning of the first efforts to evaluate systematically television when used for instructional purposes. This was first done by the Special Devices Center of the Navy. Five years have passed since the Army and Air Force applied television and kinescopic recordings to the teaching of regular technical courses. Eight years have passed since the Ford Foundation, in the Funds for Adult Education and for the Advancement of Education, began to commit funds to encourage the employment and the development of television for both informal and formal education. About \$30,000,000 has been invested by this Foundation for these purposes.

During the past ten years commercial networks and local TV stations have contributed funds, time, and facilities to the development and distribution of informative and cultural programs. During this short period of ten years, thirty-three educational television stations have been brought into existence in the United States.

The Congress, by including Title VII in the National Defense Education Act of 1958, provided *potentially* \$18,000,000 for research

By Alfred D. Beck

Pennsylvania State University Division of Academic Research and Services. An address presented to the American Association of School Administrators in Atlantic City, New Jersey, February, 1959.

and development work on the "new media" including television. The Magnuson Bill, now before Congress, would provide one million dollars for each state, territory and district for the purchase of educational television facilities.

These developments, in broad outline, form the character of an historic period of the development of educational television, a period bounded approximately by the years 1948 and 1958.

The Principal Question

Today we are concerned with

the research efforts, components and results which have been parts of this *decade of decision* for educational television. More specifically, we are asking: How can we *understand* and *use* the results of research? But first, let us make several general observations.

The Place of TV Research

1. The inventions and technical developments of television were *not* made in response to educational needs nor for educational purposes. Basic discoveries in physics and electronics made television possible, and the struggles of war stimulated development of the necessary technology. Subsequently, the great communication industries and their subsidiaries, developed television and made it a part of the fabric of our dynamic culture.

2. Emergencies in training and education have led to interest in using the potentialities of television in these fields. For military training, there loomed through the fogs of cold war the possibilities of another conflict, which, if it came, would come suddenly and require the very rapid and effective training of large numbers of men. For education, there was the post-war increase of populations of children. Thus, "mass media," including television, were viewed as means of solving problems of *mass training and mass education*. Accordingly, and quite logically, most of the research that has been done has been conducted for the purpose of answering the following question:

Can television be used effec-

tively to train or teach large numbers of pupils, students, adults and trainees; and if so, to what extent can it be used and in what subject matter areas?

3. There has been another prominent theme motivating interest in the application of television to training and education: it is the interest in television as a means of compensating for deficiencies. In military training, the foreseen deficiencies were lack of good instructors, lack of training equipment and materials and, most importantly, the lack of *time*. In education, the known and anticipated deficiencies are lack of good teachers, lack of adequate numbers and kinds of classrooms and other academic space, and lack of funds. A brief summary of the foregoing would be that we have *appropriated*, not developed, television for training and education as a result of foreseeable or actual emergencies, that we have attempted to use this "mass medium" to help perform a job of "mass education," and that we have expected television to compensate for deficiencies in the means *commonly judged to be required* to accomplish training and educational objectives. Thus far, and largely, but not exclusively, research has been used to collect evidence as a basis for judgments and decisions on whether or not television can be used to meet these requirements.

The Scope of TV Research

The scope or amount of TV re-

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Projects and Products

a monthly column

by

Philip Lewis

*Director, Bureau of Instruction Materials,
Board of Education, Chicago*

AUTOMATIC TAPE CONTROL

At the recent National Association of Broadcasters Convention in Chicago a unique device was demonstrated that appears to hold great promise for users of magnetic tape in connection with radio broadcasting activities. Plastic-encased repetitive tape cartridges are available in three sizes with magnetic tape capacities ranging from 25 feet to 1,700 feet. These provide recording ranges of from 40 seconds to 45 minutes, and facilitate instantaneous and efficient playback of announcements, programs and production aids.

In use it is only necessary to insert the cartridge into a slot in the recorder/playback unit — threading is not involved. A fraction of a second prior to the start of the recording process, a tone burst is magnetically recorded on the bottom track of the tape. When the program information has been recorded, the mechanism is permit-

ted to continue running until the tone burst originally recorded at the start of the announcement moves across the tone control head and triggers the stop mechanism. The cartridge and the recorded information contained thereon, is then automatically positioned for playback without any further cueing. The cartridge so recorded, will always play back and pick up the cue at the exact start of each announcement.

Playback units are available for standard rack mounting, either singly or in multiples. The illustration shows a console arrangement with cartridge storage and organizer racks placed beneath the units. Erase heads are not included in any of the assemblies described to protect against accidental erasure. Instead, bulk erasure of cartridges is employed.

It is recommended that the recorder/playback unit be installed in a recording studio or auxiliary control room where recordings can be made without interference with on-



the-air operations. Playback units may be installed in the main control room where the equipment is readily available to the announcer and/or operator for playback on-the-air.

Where pertinent, some thought might be given to the advantages of employing such a system in language laboratory setups, or in listening libraries where many tapes are damaged through inexpert handling. Further details can be obtained from Collins Radio Company, Cedar Rapids, Iowa.

FREE TO NAEB MEMBERS

Soldering is a vital and much used operation in the maintenance and assembly of broadcasting equipment everywhere. In recent years, however, great strides have been made to improve the effectiveness of this process through the development of new techniques and diversified products. It is no longer reasonable or economical to attempt to perform all operations with a single alloy, flux or heat

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Wanted: Science Teachers for TV

Strong backs as well as good heads
are needed by TV science teachers

The search is on! America, aware of the acute shortage of capable science teachers for grades 1-12, is looking for talent. Offhand, it would seem that in-school television can provide a satisfactory solution to this tremendous problem. This medium can be used to teach teachers and children at the same time. Consequently many administrators of schools and television stations are blessing the marriage of the medium and the subject. But how do we go about the selection of the science teacher we are constantly seeking to bring home the bacon?

There is no doubt that the teacher chosen becomes the most important factor in the successful communication of science via television. How is he selected? Is he perhaps the one of several outstanding teachers who seems least dismayed by the ordeal of taking a television audition? Or is he given the job on the basis of certain practical criteria?

As the time approaches for the selection of science telecasters for next year's programs, perhaps it would be well to re-examine the qualifications they need. Perhaps some of the items listed below may be worthy of consideration. We believe the TV science teacher should

have:

A Strong Back. Science programs require apparatus which is usually heavy, bulky, and fragile. When a teacher gives a science les-

By **C. R. Carpenter**

(Acting) Assistant Director of Science, Junior H.S. Division, New York City Board of Education

and

Barbara Yanowski

Producer-Teacher of Elementary Science Programs, WNYE, New York City Board of Education, for the New York State Regents Educational Television Project, WPIX.

son in school, he is in or near a laboratory or a source of supply. He can carry a few pieces of apparatus at a time to his room without packaging it. Science laboratories are not common in television studios, nor is adequate space usually available for making elaborate preparations. With the exception of a few items which can be left in the studio, the materials used on a program must be transported.

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Series I: The Effectiveness of Television as a Teaching Tool

63. An Evaluation of Televised Instruction in College Freshman Mathematics

By W. F. Seibert, Audio-Visual Center, Purdue University, TVPR Report No. 6, July 1958. 11 pages.

The study reported here is an extension of an earlier study of televised instruction in first semester calculus done by Dyer-Bennett at Purdue. In the previous study, the results suggested that mathematics instruction could be presented partially through the medium of television and that instructional quality could be maintained.

The present study had as its general purpose: to determine whether findings from the first study could be duplicated in a second study of the effectiveness of televised mathematics instruction. The study was planned so that its data might be used in securing information bearing upon each of the following hypotheses:

1. Measured student achievement in Mathematics 161 will be the same for comparable student groups taught conventionally (large class) and partially by means of

television.

2. In the student group taught partially by means of television, the average end-of-semester measured attitude toward televised instruction will be neutral.

3. Experience in the television sections will not affect the group's attitude toward televised instruction.

4. In the television sections, there will be no correlation between students' measured attitudes toward televised instruction and their performance on the Mathematics 161 achievement tests.

A control group, numbering approximately eighty students, was taught by means of informal, face-to-face lectures throughout the sixteen week semester. These students attended five fifty-minute class meetings per week. An experimental group, also numbering approximately eighty students, was taught partially by means of closed-

circuit television. Their instruction consisted of a 25- to 30-minute televised lecture, followed by a discussion and practice session under the direction of a graduate assistant.

All students were given the Purdue Mathematics Training Test at the beginning of the semester. In addition, six tests were prepared by the two principal instructors and each one was administered simultaneously in all experimental and control sections. At the close of the semester, student attitudes toward televised instruction were measured through administration of the Purdue Instructional Television Attitude Scale.

Results

1. Results based on test scores show that student achievement was essentially the same in the experimental and control sections of Mathematics 161. Hypothesis one is accepted.

2. In the student group taught by means of television, the average end-of-semester measured attitude toward televised instruction was neutral; therefore, hypothesis two is accepted.

3. Experience in the television sections did not affect the group's attitude toward televised instruction. Hypothesis three is accepted.

4. Evidence also supports hypothesis four that television-student achievement and attitude toward televised instruction are unrelated.

The author stresses the point that the above findings must be

considered in the light of the following factors:

1. The televised instruction involved here did not represent a marked departure by the instructor from those procedures which he might normally employ.

2. Neither the previous nor the present study provided information which might indicate that superior students will fare consistently better under conventional than under televised instruction. However, this study was admittedly not designed to test this particular problem.

In conclusion, the author states that a decision to accept or reject some form of televised college mathematics instruction must rest primarily upon considerations other than those of instructional effectiveness and student reaction to the instruction. Factors which will need to be considered are the numbers of students who may or must be instructed simultaneously, the relative costs of the alternative forms of instruction, the availability of qualified instructional personnel, the availability of other personnel who may be utilized in conducting discussion and supervised practice sessions, and the adaptability of available instructional space to each of the alternative forms of instruction under consideration. Although the author mentions the above considerations only in connection with televised mathematics instruction, they are cautions which can be easily applied to all forms of televised instruction.

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Series I: The Effectiveness of Television as a Teaching Tool

65. The National Program in the Use of Television in the Public Schools: a Report on the First Year, 1957-58

The Fund for the Advancement of Education, New York 22, New York, January, 1959. 89 pages.

The National Program in the Use of Television in the Public Schools was essentially devised to test the hypothesis that television can be used as a powerful resource for the teaching of very large classes and by so doing bring about substantial savings in classroom space and in teaching positions while improving the quality of education. This program involved nearly 40,000 students in more than 200 elementary and secondary schools. Participating in the first year of the National Program were the public school systems, of Atlanta, Cincinnati, Dade County (Miami), Detroit, Jefferson County, (Kentucky), Milwaukee, Norfolk, Oklahoma City, Philadelphia, and Wichita, as well as scores of other school systems in Nebraska, North Carolina, and Oklahoma.

Over half of this report is devoted to detailed summaries of the project as carried out by these participating systems.

In addition to these summaries, the report states that, in addition to testing the effectiveness of television in large classes, the National Program may provide evidence on:

1. The kind and number of services other than televised instruction needed to set up optimum conditions for learning.
2. The scheduling and school building problems involved in teaching large classes by television, and whether or not these problems can be met at low cost and without sacrificing quality in instruction.
3. The budgetary implications—both capital and operating—of the savings in teacher time, in build-

ing space, in equipment, and in other items of educational cost.

4. How best to develop teacher talent, not only for television, but also for teaching larger classes in regular classrooms.

Although the report suggests that it is a little early to draw hard-and-fast conclusions, the following results are mentioned as indicators of the value of ETV:

1. Students who received parts of their instruction over television in large classes did as well as, and in many cases significantly better than, students who were taught by conventional methods in small classes.

2. The use of television as a medium of instruction in many instances brought about a re-evaluation of the curriculum and course objectives.

3. Television, by bringing superior teaching to the attention of classroom teachers, proved to be a valuable tool for the in-service training of teachers.

4. Because of the careful planning that went into them, the televised courses in many cases proved much better organized than conventional courses and the television teachers found that they could cover much more ground — and in less time — than they could by conventional methods.

5. Television brought into the classroom far richer educational experiences than had been possible before.

6. Many school librarians reported that the TV students —

stimulated by provocative teaching — were making much more extensive use of the library than other students.

7. Several school systems reported substantial savings in teaching positions and in classroom space with no sacrifice of quality.

8. Tardiness and absence fell off sharply among students in the television classes.

9. Except in a few isolated cases, discipline was not a problem in the large class.

Some of the problems which arose during the first year and remain unsolved as the Program enters its second year were:

1. inadequate facilities
2. finding, recruiting, and training studio teachers

3. training classroom teachers in the techniques of handling large classes, particularly in training them to encourage student participation

4. integrating the telecast part of the lesson and the classroom follow-up into a unified, meaningful whole

5. revamping the curriculum to take maximum advantage of television as a powerful medium for the transmission of ideas and concepts as well as factual information

6. adapting the new technique of teaching by television to the varying abilities of students.

7. scheduling, both with respect to the time of day the lesson is telecast and with respect to the

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Series I: The Effectiveness of Television as a Teaching Tool

66. The Effectiveness of the New York State Educational TV Project: September-December, 1958

By Walt Sterling, Woodmere, Long Island, New York, 9 pages.

This brief report discusses some of the questions raised, credits given, and faults found with the New York State ETV Project after three months of operation. This project originated from the commercial TV studios of WPIX and had an audience of both elementary and secondary school students and home viewers.

The main findings to date center around a questionnaire sent to Long Island school officials to find out how well they had been able to adapt the TV project. Comments favorable to the Project included:

1. Eighty-three per cent of the 46 school districts are using some or all of the educational television broadcasts in their classrooms.

2. More than 22,100 students in 125 schools regularly receive part of their schooling via the TV screen.
3. Although almost all the administrators criticized specific parts of the project, not one reported that the general quality of the broadcasts was "poor" (at least on the elementary school level) and 69 per cent said the quality was good.
4. It cost Long Island school districts \$56,000 to participate in the program, but more than half of those reporting said they would expand their use of the broadcasts even further in 1959.

The Project has also received its share of criticism, with one of

the main complaints being that the telecourses are either too far below or too far above the ability of the of the students. Other criticisms include:

"There is not enough difference between materials and teaching methods used in the TV lessons and those normally used in the classroom." (Why this is necessarily a fault is not stated; it seems to emphasize teacher performance rather than the result of that performance — the student's grasp of the subject matter.)

"TV teachers tend to go too fast. Some of them demonstrate a lack of inspiration and showmanship."

"Camera techniques are generally poor. Too often the cameramen forget that they are dealing with very small exhibits and fail to move in close enough."

Other problems, brought out through the criticism, were the lack of sufficient receivers and the problem of scheduling the telecasts to coincide with the classes offered in the schools. This problem is particularly acute in the high schools. "Fixed periods, departmentalization and a shortage of special teachers make it difficult — if not impossible — to have the right students taking the right course at

the right time."

The author of the report also makes the following suggestions for changes in the administrative policies of the project:

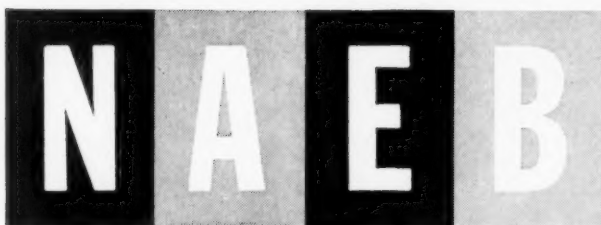
1. The Consultant on ETV for the State Education Department in Albany should add a placement bureau to his office in order to utilize better the services of teachers who have had extensive TV and radio programming and production experience.

2. *Every* (author's underscoring) person officially connected with this project should be a licensed teacher in order to approach the television medium with an understanding of the requirements of educators. The author implies that this statement should apply even to the clerical help — an implication that sounds wasteful of badly needed manpower.

3. The New York ETV project should be removed from the commercial TV station atmosphere. Although the project should still be allowed to use a commercial channel, the studio area should be separate and distinct.

4. Unless the staff is increased, the quantity of programs should be decreased to permit improvement of the quality of each telecast.

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Series I: The Effectiveness of Television as a Teaching Tool

67. The Nebraska In-School Television-Correspondence Study Program: a Progress Report for 1957-1958

The University of Nebraska, Lincoln, Nebraska. 13 pages.

The primary purpose of this program is to provide a resource which local communities may use to improve their high school programs. Orientation is primarily to small school systems, although the program is not confined to this use.

Improvement of curriculum in small schools can be felt in a number of ways through participation in the program. Since the program employs superior teachers, the small schools, in effect, add these teachers to their staff. Courses offered in the in-school program may be used to expand or even replace local offerings. By substituting TV-correspondence study courses for courses taught locally and thus reducing the number of such courses, schools will release teacher time to permit the introduc-

tion of pupil services which schools could not otherwise obtain. In addition, the in-school program makes possible the improvement of teachers in service and teachers in training through the opportunity to observe superior teaching.

The in-school program is conducted by the University of Nebraska in cooperation with the State Department of Education. Instruction is provided entirely by correspondence study and television. A local supervisor provides liaison between the University and the individual school but does not participate in actual subject-matter instruction.

The twenty-four schools participating in 1957-58 ranged in size from a two-teacher high school

with 29 pupils to an 18-teacher high school with 262 students. Total enrollment in these schools was 1753. 671 of these students actually participated in the in-school program. Courses offered included physics, algebra, general mathematics, plane geometry, English, Spanish, and art. Ordinarily the 30-minute telecast came at the beginning of the class period with a follow-up period varying in length from ten to twenty-five minutes.

There were two hypotheses to be tested:

1. Students enrolled in small high schools and taught selected courses by television-correspondence study will achieve as well as students of comparative ability enrolled in other small high schools and taught by regular classroom methods.

2. Students enrolled in small high schools participating in the in-school program will achieve as well as students of comparable ability enrolled in large high schools and taught by regular classroom procedures.

The data indicates that although results varied from course to course, generally, the first hypothesis was supported while the second was not, i.e., achievement tends to be higher in the experimental schools than in the small control schools but somewhat lower than in the large control schools.

In addition to testing the achievement of the students, a questionnaire was sent to parents, stu-

dents, superintendents and supervisors, and teachers to determine their reaction to the in-school program.

Of the 86 parents who returned the questionnaire, 55 wanted the program continued and 31 did not. Those who did were impressed by the quality of instruction and the high standards maintained. Some also felt that subjects were offered which otherwise would not have been available to their children. Adverse reactions stressed the lack of personal contact between the pupil and teacher and the inability to ask questions at the time they arose. Superintendents and supervisors had essentially the same reactions as did the parents.

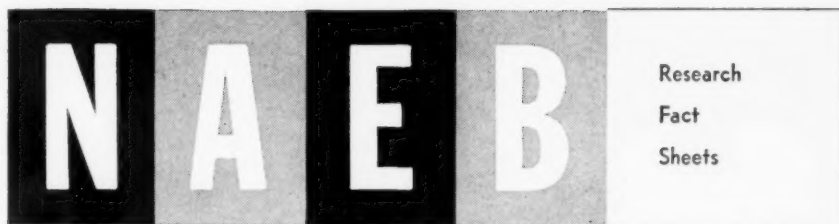
The teachers in schools where the TV-Correspondence study program was being used who had no direct contact with the classes were evenly divided in their reactions to the program. Some felt that this method of teaching could be very successful while others felt that it was good but not a substitute for a teacher in the classroom. Others felt that it would be better for special groups of students such as the "gifted." Comments that indicate the feelings of this group are:

"It's worth more study and testing. We need to know how to use it in order to get the most good from it."

"It will never take the place of classroom teaching."

"... I believe this method of teaching can be very successful. It

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Series II: Production Principles

19. Cost Estimates and Comparisons for Televised and Conventional Instruction

By W. F. Seibert, Audio-Visual Center, Purdue University, TVPR Report No. 7, November, 1958.

This report supplies several preliminary cost estimates for televised instruction and compares these with similar cost estimates for conventional instruction. The author makes it clear that costs of formal instruction may be computed many ways; the procedures adopted for the purpose of this report represent only one approach to the problem.

The cost comparison is made between lecture or lecture-demonstration courses, both televised and conventional. The reason for the choice of this method of instruction for comparison is that such use has been most thoroughly explored to date and it constitutes an area of instructional effort large enough to merit special consideration.

The basic unit of cost considered is the *direct instructional cost per student per semester hour of credit*. For conventional instruction, the only direct cost factor is instructor salary. For televised instruction, costs are divided into:

1. instructor salary
2. instructor "released time"
3. costs of establishing, maintaining and operating the TV facilities
4. salaries of graduate assistants to supervise classroom groups, help with grading, etc.

The following four assumptions have been made which have a bearing upon costs:

1. Instructors normally carry a teaching load which is equivalent

to 12 class hours per week.

2. A student section (presumably a discussion section) consists of 30 students.

3. The cost of providing classroom space, heat, light, etc., is the same for conventional and televised instruction and need not enter into a consideration of comparing direct costs of these two forms of instruction.

4. A graduate assistant (current ten-month salary at Purdue: \$1700) can perform satisfactorily if given two hours of credit against his twenty hour work week per hour spent in direct supervision of a TV student section.

Data in six charts are based on ten-month instructor salaries of \$6000, \$7500, and \$9000; they include TV instructor "released time" in the ratio of two for one, three for one and four for one; they include estimated TV facility costs of \$20 and \$30 per hour of instruction. In addition, basic unit costs for student groups ranging from 60-120 students are provided.

Two examples are given of how costs are actually calculated and the author then makes the following summary of the data:

1. The estimated costs of instructing fewer than 120 students by means of TV are invariably higher than the estimated costs of providing the instruction conventionally.

2. It is also noted that the student enrollment level at which TV instructional costs "break even" with conventional costs decreases as instruction salary level increases.

3. An instructional cost gain might be obtained through TV instruction in courses which could provide 150-270 students or more for simultaneous instruction.

4. TV instruction may possibly be provided by the most competent instructors at a cost which is equal to or less than the cost of conventional instruction as executed by the less highly paid instructor. This would require sizeable student groups available for simultaneous instruction; however, with increasing enrollments and decreasing teacher supply, this possibility merits increased consideration.

The author notes, in conclusion, that no mention is made in this report of the possibility of presenting filmed or video-tape-recorded lessons on TV. There were two primary reasons for its exclusion:

1. There does not appear to be sufficient accumulated experience to provide a reasonable basis for estimating the useful life of a "frozen" series of lessons.

2. Many questions concerning residual rights of an instructor who prepares such a "frozen" series are not yet answered.

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Series VI: Impact

12. Television and the Child

By H. T. Himmelweit, A. N. Oppenheim, and Pamela Vince, Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1., December, 1958.

(The following review is based on the press notice of the above book released by the Nuffield Foundation. As a preface to this study, it must be kept in mind that these findings are for Britain—where quite different patterns of listening and family behavior prevail from those in the U.S.A.)

Television and the Child is based chiefly on a detailed examination of over 4,000 children in five cities. In one of these cities, a new transmitter was about to bring television to the area, offering an opportunity to examine the children both before and after the advent of TV. No mention was made of procedure or testing methods; the main body of the release was concerned with the findings of the study. These are listed below:

1. The effects of television vary according to the child's age, sex, intelligence, home background, and personality. On the whole, the influence of television is less dramatic than popular opinion is in-

clined to suppose. It does not change the child fundamentally.

2. It is not true that most children become heavily addicted to television (this is a fate only of a minority; the average number of viewing hours a week is approximately 12½ hours).

3. Children view selectively and exercise a good deal of discrimination rather than viewing almost continuously from the time they get home until they go to bed.

4. Television is not responsible for children doing poorly in school, for listlessness, loss of sleep, bad dreams, or lack of concentration.

5. Television does not make children more passive or more aggressive.

6. Television is not responsible for eye strain.

7. Working-class children do not view more than middle-class children.

8. It was not found to be true that television stimulates much activity although it broadens interest.

(In connection with the above

statements, Dr. Harry Skornia of the NAEB commented that various studies made in the United States indicate that many of these cannot be tossed off as lightly as the authors do for Britain. It may be due to the fact that this is a press release based on the book, but this reviewer also felt that the above statements were too flat and dogmatic when compared to the previous suggestion that the effects of television varied with the individual personality.)

9. Parental example is most important. The authors urge parents to help children view selectively and discourage them from never trying anything new if they can help it.

10. Television, by itself, cannot keep the family together unless parents use the programs as a common ground for discussion. Also emphasized is the need for caution in blaming television for problems which may be due to more fundamental causes.

11. One of the important findings is that three out of four 10- and 11-year-olds view until nine p.m. Even after ten p.m., one-third of the 13- and 14-year-olds are still watching. TV producers and parents are urged to consider what effect adult programs up to nine p.m. are going to have on a large child audience. Producers are urged to commission regular analyses of program content so that they can maintain program balance, and to show increased initiative, experiment more, and rely less on a safe formula, checking their hunches by

adequate studies of the effects of their programs.

12. In general it has been found that television does not over-stimulate children, but certain programs and certain types of incidents arouse fear, and this fear depends less on the sheer amount of violence or injury portrayed on the screen than on the extent to which the child can imagine himself in a similar situation.

13. The opening of a second channel (ITA) has not caused the children to view more. Television can only displace the child's other leisure interests to a certain extent; beyond that, the child reaches satiation point and turns away to other things at the expense of viewing.

According to the release, if they were asked whether television is good or bad for children, the authors would say that the question is no more meaningful than asking a doctor, "Are injections good or bad for children?" This appears to be a poor analogy since the former can have socio-psychological implications while the latter is essentially biochemical.

The authors conclude that by and large television has not achieved more than its predecessors, radio and films. They suggest that this is because producers are not fed with enough information about the effects of programs on their audiences. As they are unaware of the true range of acceptable possibilities they tend to repeat the safe formulae.

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Series VII: Administrative and Faculty Reactions to Educational TV and Radio

12. A Study of Load Credit for TV Teaching

By F. G. Macomber and Laurence Siegel, Miami University, Oxford, Ohio, October, 1958, 6 pages.

Most of the instructional TV research to date has been "student-oriented." The impact of TV instruction upon teaching as a profession is relatively virgin territory for the researcher. One of the simpler, although highly important, issues within this area is the matter of teaching load. This paper summarizes current load practices at a number of colleges and universities offering telecourses for credit, the teachers' reactions to these practices, their estimates of the amount of time required to teach a TV course, and their actual records of time expended in connection with several TV courses.

A questionnaire concerning load currently carried, load deemed desirable, and expenditure of time in connection with the TV course,

was mailed in April, 1958, to a sample of college-level TV instructors. In addition, these instructors were requested to complete a sequence of fourteen daily activity logs upon which they were to keep an accurate record of their activities. A total of 28 respondents completed the questionnaire, and 19 of these respondents also maintained the entire sequence of logs.

Results

1. The practice of releasing faculty members from other responsibilities for the express purpose of advance preparation of a TV course is more widespread when the course is to be broadcast than when it is to be restricted to closed-circuit transmission. The amount of released time varied from a 25 per cent load reduction

for one semester to entire release for a semester. Miscellaneous comments by the respondents indicated that some released time is badly needed in advance of actually teaching on TV.

2. There does not appear to be an appreciable correlation between the number of hours the TV instructor must appear before his class and the extent of the reduction in his load. Rather, the load credit for TV courses without laboratories or discussion sections tends to be about the same as for TV courses wherein such sections demand the presence of the instructor.

3. It is apparent that TV instructors as a group believe that there is some discrepancy between their actual load adjustment and the "proper" load adjustment for teaching a course by television. Closed-circuit instructors received a load credit of 50 per cent, but believed it should count 70 per cent the first year and 50 per cent in succeeding years. Instructors on open-circuit received a load credit of about 50 per cent but believed the course should be counted 100 per cent the first year and 65 per cent in succeeding years.

4. Open-circuit TV instructors estimated considerably greater time expenditure than did the instructors on closed-circuit TV. If the instructors' estimates are assumed

to be accurate, a closed-circuit course should be equated with two conventional classes, whereas an open-circuit course should be equated with four or five conventional classes.

5. Closed-circuit TV instructors logged 6.3 median hours per week of preparation for each hour on camera. This value is in marked contrast to the median of 10.6 hours per week of preparation logged by open-circuit instructors for each hour on camera.

The position taken in this paper is that the proper base for calculating the load of TV instructors is the time required for preparation and presentation to a conventional class. On the basis of the data, it would seem proper to equate a single closed-circuit TV course with about two conventional classes and a single open-circuit course with four or five conventional classes in the calculation of load. In most universities this would probably mean that a closed-circuit course taught on TV for the first time should constitute 50 per cent of a load, whereas an open-circuit course should constitute an entire load. Current administrative practice, as a rule, does not permit sufficient reductions in load for TV teachers.

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Series IV: Audience Studies

20. New Developments in Audience Research Methods

By W. A. Belson. No. 77 in the Reprint Series of the Research Techniques Unit, London School of Economics and Political Science. (Originally appeared in The American Journal of Sociology, Vol. LXIV, No. 2, 1958)

Within the Audience Research Department of the BBC is a unit called "Projects and Developments", which, in addition to other jobs, frequently is called upon to do planning studies or measure effects of programs. The methodology for these two tasks is described in detail in Dr. Belson's article.

Briefly, the planning studies consist of three broad processes:

1. Obtaining, at a testing center, as representative a sample as possible of the target audience. These subjects are usually obtained from the BBC's daily survey of listening and viewing.

2. Administering to them prepared tests under standardized conditions. The tests vary from the entirely subjective essay type through

straight-forward questions calling for factual information to a process of getting group members to call out opinions on some issue and then having the whole group vote on them.

3. Using statistical methods to eliminate as much as possible of the bias or unrepresentativeness inherent in such a group, that is, to eliminate the irrelevant volunteer bias or that bias which is not predictive of whatever is being studied.

One weakness of this method is that it cannot function unless a good deal is known about the population distribution of a wide range of potential predictors or corrective criteria. The best line for development of this system would be to try to develop a range of criteria

which tend to recur as useful predictors—a concept of “general-purpose corrective criteria.” Population distributions for these would then be developed and stored.

The method for measuring the effects of a television broadcast is called the “Stable Correlate” technique. This is designed to eliminate all or most of that part of the difference in test score which arises between people who have or have not viewed a broadcast. It permits a measure of the effectiveness of the broadcast without the coloring influence of original, pre-broadcast differences. The adequacy of the correction procedure to allow for pre-broadcast differences depends on at least two things:

1. The characteristics in terms of which the adjustment or correc-

tion is made must not themselves be open to change by the program, e.g., age and social background. In other words, they must be stable as far as the broadcast's effects are concerned, i.e., Stable Correlates.

2. These characteristics must be fairly powerful predictors of test score, for upon their power depends the success of the corrective procedure.

Here, as in the planning studies, a need is felt for developing groups of general-purpose predictors and for learning which overlap and which do not. However, this method does allow the measurement of effect to be made without interfering in “the essentially complex sequence out of which ‘effects’ normally emerge.”

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depends upon the attitude of the student."

"I don't think this type of teaching is too successful because it does not provide the student with the personal contact with the teacher which I think is so important."

A large majority of the students felt that the TV-correspondence study classes were harder than their traditional classes. Furthermore, slightly less than one third of them said that they enjoyed their TV-correspondence study courses *more* than their regular classes. The difficulty attributed to this study method may be due to the fact that

it was new or that the standards set were higher than those usually met in their schools. The fact that they enjoyed the courses more might have been due to the novelty of the situation and can better be tested a few years from now. Overall, the students were fairly equally divided on the question of whether or not they learned more by this process. Student attitudes toward the TV-correspondence study process were apparently affected to some degree by their feelings of success or failure in the classes they were taking.

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Series I: The Effectiveness of Television as a Teaching Tool

68. Communication Skills: an Experiment in Instructional Methods

By Samuel L. Becker, Carl A. Dallinger, Harry H. Crosby, and David Gold, State University of Iowa, Ames, Iowa, August, 1958. 43 pages.

During the 1957-58 school year the Communication Skills staff and the Television Center of the State University of Iowa compared experimentally the effectiveness of three methods of teaching:

1. Traditional instruction with a single instructor responsible for each class and for the instruction in all four skills basic to the course—reading, writing, speaking, listening.

2. Bibliography method. The classes met three instead of the regular four hours per week and were presented the basic principles of the course through a bibliography of assigned and collateral readings leaving class time free for discussion and practice of skills.

3. The classes were given basic course principles through a series

of kinescopes presented by "experts" and supplemented by discussion and practice of these principles in regular classroom meetings. The kinescopes were projected in classrooms as conventional motion pictures.

An extensive series of tables and data analysis is included in this report, as well as lengthy appendices. The general conclusions were:

1. Students can retain the principles of communication and acquire greater skill in speaking, writing, reading, and listening *equally* well from each of the methods of instruction included in this experiment.

2. While it saves classroom space and instructor time, the bibliography is at least as efficient as

the other two methods and thus seems to be the most *efficient* method tested.

3. Students of varying academic ability do not seem to be differentially affected by the method of instruction.

4. Though students, in general, prefer the traditional method of instruction, experience with either of the other methods tends to make them much more favorable to the

method which they have experienced.

5. Teachers would probably choose the traditional method of instruction. They feel that additional class time is needed for discussion and apparently have little faith in the ability of freshman students to read, evaluate, and retain written material.

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duration of the telecast and its place in the class period

8. quality of instruction. Although this has not really been a major problem in the National Program, it is true that the quality of the output can only be as good as the quality of the input.

During the second year of the program, all of the participating school systems except one are continuing with the experiment and

most of them have expanded their participation in terms of the number of schools and the number of students. Two new experiments have been added to the Program this year. These will be conducted in elementary schools in Kansas City, Missouri, and elementary and secondary schools in Evansville, Indiana.

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Series I: The Effectiveness of Television as a Teaching Tool

64. The Effectiveness of Laboratory Instruction in Strength of Materials by Closed-Circuit Television

*By J. F. Throop, L. T. Assini, G. W. Boguslavsky,
Rensselaer Polytechnic Institute, Troy, New York,
November 8, 1958, 11 pages.*

A study was started in February, 1957, of the possibilities of using televised instruction for the Materials Laboratory course. Increasing class size with resulting demands for larger instructional staff and more space prompted the investigation of large-group teaching methods. Closed-circuit television was finally selected for investigation on the assumption that live television might depart less from the actual laboratory situation and give the students more of a sense of spontaneity and participation in the experiments than would films. The use of a two-way sound system, permitting immediate questions from the class and answers from the laboratory, was expected to emphasize further the sense of participation. The cost of the study was shared by Rensselaer's Pro-

ject Award, the General Electric Educational and Charitable Fund, and the Educational Television and Radio Center.

The objective of the materials laboratory was to impart an understanding of the mechanical behavior of engineering materials and structural elements rather than to train the student in the techniques of materials testing. Such instruction was given to 234 members of the class during the spring term of 1958 by closed-circuit television, while the remaining 199 members received instruction by the conventional laboratory method. Student learning was measured by means of objective quizzes, a term-paper grade, and a common objective examination. Assignment of a student to a section was determined pri-

marily by the period available in the student's academic schedule. The opinions of the students in both groups were surveyed by means of an 18-item questionnaire with a 7-order preference scale for each item.

An extensive statistical analysis of the data collected resulted in the following conclusions:

1. Given comparable populations, the television method of instruction is just as effective in achieving the educational objectives of the course as the conventional laboratory instruction procedure.

2. Communication of information by the television method is more uniform from section to section than that provided by instructors in the conventional laboratory classes.

3. The students' achievement in the course, under either method of instruction, was positively related to, and was slightly higher than, their prior academic standing.

4. The effectiveness of communication, under both methods of instruction, is maximal on the second presentation, but tends to de-

crease with subsequent successive repetitions of the same instructional material.

5. From the student's point of view, the television method of presentation of the subject was slightly more efficient than the conventional method.

6. The use of television instruction can be economically justified for this course only when the number of students to be taught approaches 400 in each term.

The authors also made the following recommendations for future use of television in this course:

1. Provision should be made to equip larger classrooms for television instruction.

2. In view of the expressed reluctance of the television students to address the teacher by means of a microphone, an effort should be made at the outset to encourage such two-way communication.

3. The capacity of the students may be exploited more fully in the course by making the content more rigorous.

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Soviet Radio and TV

Continued from page 4

ly located receivers. For example, in Leningrad, out of 1,000,000 sets, 700,000 are wired radio. This, among other things, makes it impossible for people so served to listen to programs from abroad. On the other hand, many off-the-air receivers are short wave equipped — some of our hosts put it as high as 90%, which is a factor in the opposite direction.

Now, something about the programs. Half or more of the time on the air is devoted to music. Much of this is serious music, although there is light music too, but not much American jazz. Some of the Russian broadcasters told us with great pride how they played American music from Samuel Barber to George Gershwin, and seemed even a bit disappointed when I said that our NAEB stations, and many commercial ones too, especially FM, broadcast much Russian music, from Tchaikowsky to Shostakovich. Moscow radio has over a dozen newscasts a day. The Russians also broadcast much drama, special events and sports. They have very little comedy, though.

There are some excellent children's programs for out-of-school use. But strangely, neither Soviet radio nor television broadcasts for in-school use, nor does either offer formal instruction—like our telecourses—for adults at home, or group listening by any age. It was

surprising to discover this almost complete absence of teaching by radio or television, in a country so education-minded, where audiences could so easily be organized.

In the news, especially, and in many other programs too, there is a strong Communist Party slant. During the week of the Young Communist League's fortieth anniversary, for example, there were many programs on that theme, while November seventh brought many programs about the forty-first anniversary of the Soviet revolution. But even though the award of the Nobel prize to Boris Pasternak was front-page news all over the western world while we were in Moscow, Russian radio, like Russian newspapers, gave it very little play.

Soviet broadcasting is non-commercial, of course, but many stations devote from 10 to 30 minutes a day to public service announcements, including some about articles for sale at various state stores, and for these a small charge is made. But these "commercials" are broadcast more for information than to sell goods, and the revenues derived from them are insignificant. In any case, Soviet broadcasters have no reliable way of finding out what effect such "commercials" have on sales, since nowhere in Russian radio or television is there any systematic study of the general

audience to determine its size, its nature, or its reactions.

Soviet television can produce better pictures, technically, than American television. The Russians use a 625-line standard, with a 6 megacycle video bandwidth; we broadcast with a 525-line standard, and a 4 megacycle video bandwidth. If that sounds technical to you, then let me say that it does to me too; but our engineer delegate stated that, all factors considered, the Russian television system definitely can produce better pictures than ours.

Soviet television cameras work well, and their kinescope recordings—that is, film recordings made off television viewing tubes—are superb. But for them, video tape recording and color television are still in the laboratory.

On the overall, therefore, Soviet television is behind ours. They have only about 50 program production centers with transmitters, most of which have low-powered satellite stations to extend their coverage. But we have over 550 television stations with their own studios. Furthermore, not even Moscow and Leningrad, some 400 miles apart, are yet connected so that they can simultaneously carry the same program. However, relays are being installed, and should connect the main cities in another year or so.

There are about 3,000,000 television receivers in the Soviet Union. About half of these are in Moscow, 350,000 in Leningrad, and 260,000 in Kiev, which doesn't leave too many for the other 50 ci-

ties with television stations. Many sets have 16- or 17-inch screens, although the ones loaned to us had 21-inch screens. There were many smaller sets in the department stores, with prices ranging from 900 to 2500 rubles, \$90.00 to \$250.00 at the current tourist exchange rate.

Program output is not remarkable, either in amount or quality, considering that the major Russian cities have had television for almost ten years. One of Moscow's two channels broadcasts on most days from 6:00 to 11:00 p.m., and the other one for even less time. Leningrad and Kiev, after seven years on the air, offer an average of four hours of programs per day, with a bit more on Sunday. A good half of this is film, both old and new. There also is live drama—some of it excellent; much music, ranging from popular to symphonic; many carefully planned programs for children and youth; and sports events from water polo to football.

There are daily news programs in Moscow, and alternate day programs in Leningrad and elsewhere. News broadcasts, so far as a non-Russian-speaking viewer can judge, are pretty heavily weighted with films of Communist officials shaking hands with visiting delegations, and giving or receiving medals. There also is much agricultural and industrial material, but little hot-off-the-wire stuff such as one gets from any American station.

For the most part, television production is poor. In spite of the fact that Russian film makers do

some superb work in preparing films for television, the television production crews seem to be content much of the time with putting cameras before speakers or performers, and leaving them there for shots of a minute or longer. Yet, here again, the Russians *can* do it; I saw a Russian television drama which was simply superb.

Russian radio and television is good or bad, depending upon one's point of view. If broadcasting is mainly a propaganda arm of the State, then the Russians do well. If

broadcasting is to be a source of uncensored information, and if it is to provide unfettered intellectual leadership, then it is doing badly. The fact is, of course, that Soviet broadcasting reflects the prevailing information theories of the USSR, just as our broadcasting grows out of the freedom of expression concept which underlies our political system. No reasonable man would expect it to be otherwise: radio and television do not exist in vacuums; they are integral parts of the national cultures which they serve.

Understanding ETV Research

Continued from page 2

search involved in the application of television to training and education has probably not exceeded ten percent of the direct cost of projects and programs. Although this is a small proportion of the total in relation to the values at stake, it is a large percentage compared to the amounts usually invested in research on most new educational developments. For reasons not yet analyzed, research and experimentation has been a *requirement* and *expectancy* of instructional television projects. As a result, research has been conducted in many places. Among these are the Navy, Army, and Air Force projects; colleges and universities like Penn State, Montclair State Teachers College, New York University, Miami University, the University of Houston, the Chicago Junior College, the Case Institute,

the Universities of Minnesota and Iowa, San Francisco State College, and the University of Oregon; and public school systems, such as Pittsburgh, Hagerstown, Philadelphia, Dade County in North Carolina, Detroit, Milwaukee, and other public school systems throughout the nation.

A series of reports is now being published and distributed which, in sum, provides a substantial basis of evidence on a very wide range of *practical problems* on both closed-circuit and broadcast television, applied in the context of higher and public education. An excellent summary of many of these reports will soon be published by the Fund for the Advancement of Education.

The questions that have been asked of research have determined its kind and character. Research on

television has been operational, developmental and applied. Some of it may be classified as "action research," or research conducted in such a manner as to implement educational changes and to increase the acceptance of these changes.

Characteristics of TV Research

Research on TV has dealt with problems in the areas of relative effectiveness, appropriateness of patterns of application and adaptations, acceptance by teachers, administrators, students and the public, and feasibility or practicability including the evaluation of facilities and the economic aspects of TV operations.

Compared with much educational research, that on educational television has been *relatively* rigorous and well controlled. However, most of TV research must be classified as *qualitative* and *exploratory*. This is a result of several factors: the kinds of questions posed for answers, the fact that studies of TV have been done in the *context of actual instruction*, and the present state of development of measurement and experimental design. Nevertheless, for purposes of providing information basic to the making of *practical* decision, TV research has yielded, or is now yielding, rather adequate information. The interested school principal or superintendent, college or university president, provost or dean now has available a sufficient body of information for deciding whether or not a school system or institution of higher education

should undertake to use any one of a series of *models of TV* operations which have been developed and put to tests.

Much of the research that has been done has been what might be termed *model building and model testing*. Thus, the interested educational administrator has the possibility of selecting that model which seems best to fit his needs. He can study this model in detail, establish and adapt it to the requirements of his own school system, college, university or educational program, and proceed with the operation.

The administrator will find that the research results which have come from model building and testing have high degrees of transfer to his **practical problems**.

Since TV research has been mainly concerned with applied problems, it has not formulated general principles which have a wide range of applicability. The model-building and model-testing approach may provide this desirable outcome, namely, a satisfactory degree of generalizability and applicability of results to a wide variety of conditions.

I say *may* because there is a vicious fashion and unreasonable expectancy among educators which might be termed the *ad hoc fallacy*. This view holds that the proof of the effectiveness, appropriateness, acceptance and feasibility of a method or procedure must be tested in each different course, each educational program, every school system or institution. The *ad hoc fallacy* sometimes reaches limits of

greater absurdity and requires that tests and proof are needed for each different teacher, and I suppose eventually each pupil or student. The *ad hoc fallacy* is the extreme opposite of the over-generalization fallacy. It is the requirement that experiments be duplicated over and over again every time an application of television is made in a somewhat different situation.

Research on instructional TV or educational TV has been focused on means and methods of originating, distributing and presenting instruction and information to pupils, students and adults. The research and evaluations have been ancillary to projects and programs planned to solve practical problems. Therefore, television research to this date has been directed more toward the evaluation of the strategy and tactics of education than toward the basic problems of the logistics and the core substance of education. It has not been directed toward study of the complex factors of motivation, perception, learning, the communication processes and the factors of "social climates" which affect the scholastic, academic and cultural development of those who would learn. It has not been directed toward *organizing and programming information for learning*.

The Role of TV Research

We have made a beginning toward defining the role or place of research on instructional television. Its role has been cast into forms to be of the greatest possible use to practical educators. It provides

information of value in making operational decisions. The general role of research *cannot* be that of making judgments and decisions. Research on television merely serves to establish limits to what can and cannot be done, or *to define the ranges of risks involved in practical decisions*. The results of TV research aid in the definition of general problems which will be encountered by all educators who use it, but these problems will need to be *solved* by the art, diplomacy and skills of administration.

Experiments with television have served the function of introducing new "energy" into traditional educational systems, and thus have disturbed the "steady state," permitting change, stimulating new considerations, and bringing into question traditional sacred practices and prejudices. TV research has played well the role of a disruptive instigator of change; but whether or not these experiments will serve a *constructive catalytic role* in education remains to be seen, and this result will depend largely on our conceptualizations of possibilities and our efforts to realize them.

The role that has been abundantly demonstrated for television is that of extending instruction, i.e., distributing and presenting instruction to large numbers who require teaching. The quantitative dimensions have been explored and estimated; the potentials of television for improving the *qualitative* dimensions of education are just beginning to be realized.

General Results of TV Research

A. Comparative Effectiveness:

1. Experiments which have controlled all variables in courses or programs of instruction and tested specifically the effects of televising instruction have shown approximately equal learning from conventionally presented and televised instruction.

2. In experiments, mainly in public schools, where considerable effort has been made to provide good instruction for televising to school classrooms, and where this has been compared with "conventional" instruction by a different group of available teachers working in the usual manner, differences have been found, even with very large classes, favoring the televised patterns of teaching. Note that in most of these experiments teacher variables, television variables, and class conditions variables are compounded. Also, it should be observed that in school systems using broadcast instructional television, courses can be made available where they would not otherwise be available. (The "zero +" concept.)

Furthermore, it should be observed that *poor* schools may benefit more than good or superior schools by the tested patterns of televised instruction.

3. The repetitive finding of controlled experiments of no "significant differences" in the effectiveness of conventional and televised instruction has been based on a very wide range of sampling of different subjects. The list of courses in which experiments have

been done reads like a college catalogue and a high school class list. This finding should not be given the extreme interpretation that televised instruction is equally effective for all kinds of specific teaching-learning functions. Adequate work on the problem of defining *specific* teaching-learning functions and of determining how television may relate to them has not yet been done systematically.

B. Appropriateness:

Exploratory work with instructional television has opened up a new field for development, which is the invention and adaptation of facilities, equipment, space, scheduling, programming, and the presenting of instruction to learners. A great variety of these have been tried but many new use patterns and adaptations remain to be explored. Television is not a monolithic technology. Whether viewed as equipment or as an operation, television can be judged as flexible. It spans a great range of uses. Its programs can be almost as varied as are most educational methods. Pointedly, I would like to emphasize that most of the present public stereotypes of television need correction and change.

C. Acceptability:

1. The acceptability of television depends on its proven and demonstrated effectiveness, its understood usefulness and sound justification. Acceptance depends on the assumptions, viewpoints, experiences, prejudices and amounts of information of people who react to it. The validity of these views needs to be carefully interpreted.

2. Generally experiments have shown that acceptance increases with the duration of its use. If the instruction is good or superior, acceptance increases; if instruction is poor or mediocre, acceptance decreases. Thus far the quality of teaching seems to be highly correlated with the competencies, characteristics, and skills of the TV teacher.

3. Acceptance and support of television are highest where there are *clear and evident* educational needs which can be met better by using television than by other ways of meeting these needs.

D. Feasibility:

1. Televising instruction has proven to be practical under a very wide range of circumstances and conditions.

2. Limiting factors to practicability can now be defined and anticipated, e.g., limitations of equipment systems, time, scheduling requirements, and the number of channels needed.

3. We can now estimate the cutting points of costs and productivity; thus operations *can be* made economically efficient. However, there are known barriers to making the use of instructional television economically efficient, and ways of removing these barriers need to be developed.

The Next Phase Ahead

I have repeatedly emphasized the judgment that research on television thus far has been conducted to answer practical questions and to provide information for

making decisions about the practical uses of television in education. Until now the Department of Defense, industries and foundations have sponsored applied research. And now once again Title VII of the National Defense Education Act promises to continue this emphasis on research to encourage the application of the "new media" to practical problems of education. Perhaps this kind of research can be continued to the extent that it is needed and justified, but a new emphasis and re-orientation is urgently required.

What is needed now for research on instructional television is also needed for education generally. Research on television has pointed again and again to unsolved basic problems of education and more specifically to the unknown and untried in the fundamental areas of teaching-and-learning. Now we need research in depth. We need the kind of research which will yield results that can be formulated in terms of general principles. We need research oriented *from and toward* theoretical systems. We need to create conditions and provide the means for basic experimentation in order to provide a flow of new concepts for application testings. We need to provide an optimum of protection for research men from the pressures, demands and vicissitudes of insistent practical requirements. In brief, we need in this country, and we cannot afford not to have, an adequate number of permanent Experimental Research Centers suitably equipped and adequately

staffed for attacking problems which are basic to learning and academic development. We need to apply systematically all that we know about motivation and learning. We may well find that only when these steps are taken will it

be possible to pierce the quality barriers which confront us, not alone in the area of instructional television, but also in other areas, and thus to permit the achievement of higher levels of excellence in education.

Wanted: TV Science Teachers

Continued from page 12

The load, as a rule, will include two or three (sometimes more) bulky and heavy packages. Seldom is porter service provided. For each program, television teachers of science find themselves doing some or all of the following:

1. carrying packages from the room at the source(s) of supply to a vehicle;
2. loading the vehicle;
3. unloading the vehicle at the entrance to the studio building;
4. carrying the packages to the door of the studio;
5. unpacking the boxes and assembling the apparatus for use as his props;
6. repacking the boxes after the program;
7. carrying the packages to the exit of the studio building;
8. loading the vehicle;
9. unloading the vehicle at the site of the source(s) of supply;
10. carrying the packages from the sidewalk to the room at the source(s) of supply.

Yes, indeed, he needs a strong back. Remember that all this manual labor must go on regardless of the weather; and in a snow-

storm, a heavy rain, or a high wind, the job is tiresome as well as tiring. It is especially so, when, as it often happens, the telecast begins within a short time after one of these bouts with the packages. *Good Health.* In spite of everything—long hours of preparation, hauling of materials, minor ailments such as colds, bad weather—the television teacher must meet uncompromising deadlines. The program must go on! There is no doubt that he must have stamina. *Patience.* Television teachers may not give in to "temperament" regardless of the strain. They must be willing to go before the camera with the appearance of composure even though all has been near chaos a moment or two prior to air time. *Typing Ability.* Without this skill, a television teacher will be badly handicapped; he will have to prepare several "run-downs" of the programs; he will have to prepare manual materials for the classroom teacher's use; he will be expected to answer his own "fan mail"; he will prepare expense vouchers; and he will have endless letters to write requesting materials and acknowl-

edging help received.

Charm and Poise. The television teacher will have to deal with confusing, unexpected, emergency situations as a matter of routine—particularly if he appears “back-to-back” in the same studio with other programs. In such instances, he must not only be extremely quiet but he must always appear at ease, always be a model of good character, always be a model of kindness, always be the example of a teacher’s teacher. He must be able to accept direction without becoming disconcerted even when he is “on the air.” He must be able to maintain his presence of mind without a lapse during the entire time he is before the cameras.

Skill in Teamwork. He must appreciate the importance of his timing, have regard for prearranged plans and signals, adapt his methods of presentation to the medium of television, rely on directions and on the opinions of his colleagues, the director, the producer, the floor manager, and a number of other people in the studio. He must carry his full weight of obligation for the success of the program.

Fluent Speech. A person who has any speech mannerisms which are evidences of a shallow cultural background cannot be used on television. He must be a person who uses care not only in the delivery of his words but in his choice of them. Most teaching programs are of an *ad lib* nature. This calls for articulateness of the highest order. He must be a person who *habitually* and seemingly without hesitation speaks in a way that is above

criticism. The voice should be resonant, without affectation, and give the impression of a warm personality.

An Interesting Approach. It might go without saying that this science teacher must have a thorough knowledge of his subject. But more than this, he must have a talent for injecting interest into his presentation. He should be a real person, not just a scholar. He should have an approach that will arouse and sustain the interest of his audience. He must not be a bore. He must also like youngsters, so that he will not talk down to his audience. If he uses youngsters on the air, he should treat them with respect and not use them as foils for his wit or conceit. They should look good to their peers and thus he should be able to select the youngsters on the basis of their ability to respond. He should regard them not merely as adjuncts but as thoughtful participants, who have a contribution to make and are allowed to make it. He should put them on a footing that has dignity, and he should be able to show in his words and his attitude that he recognizes all this.

Imagination and Resourcefulness. The television teacher should be one who will take the trouble to conceive ways of using material resources and personnel in a way that will impart interest as well as meaning to the viewers. He must be willing to spend time going after people and things which will lift his presentation above the level of mediocrity. He must be prepared to devote hours of leg work to mo-

bilizing the elements which will become a part of his program.

Intellectual Honesty. He must be above reproach, because he represents his profession. In the eyes of the public, he must be 100% sincere.

Experience. He must have a large repertory of ideas which he knows will work because he has used them many times. He must also be experienced in putting into practice the methods and psychology of good teaching so that he will be ever-mindful of the aims of the course of study, and also of his relationship to the role of the teacher of the class viewing the program.

Belief in What He Is Doing. This teacher must have the zeal and the philosophy of a missionary. He

must be able to go through all of the effort required in the use of his many talents and not be disillusioned or disheartened when he finds out that he has been misunderstood or ignored. He must be able to feel that he has made a worthwhile contribution to science education, and gain satisfaction simply from knowing that he has done his best.

We are fully aware that it may be somewhat difficult to find all these qualities in any individual at all times whether he is in or out of the school system. Nevertheless, since we are to use this person as a model educator on public view, we *must* choose the best person we can find. And then we must do our best to enable him to be even better than he is.

Projects and Products

Continued from page 41

source.

Single copies of an attractive 78-page book entitled, "SOLDER . . . its fundamentals and usage" have been made available on request to NAEB members through the courtesy of the Kester Solder Company, 4201 Wrightwood Avenue, Chicago 39, Illinois. A few of the topics dealt with in this well-illustrated publication include:

1. Selection of solders and fluxes for specific applica-

tions

2. Description of conventional as well as unusual solder-flux combinations
3. The proper application of solder
 - A. Flux-core
 - B. Dip Pot
 - C. Induction
 - D. Resistance
 - E. Oven or Hot Plate
 - F. Torch
 - G. Printed circuit

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